catalogue

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I Preface

1.1 Summarize

This product uses advanced sinusoidal pulse width modulation (SPWM) technology, the main circuit use Mitsubishi IGBT modules, thick film circuit drive protection is Japanese Mitsubishi, high reliability, full protection, waveform distortion, high power and so on.

The PV Series inverter DC input rated voltage DC48V/110V/220V; the output is AC 220V/60Hz. solar energy is mainly used for new power generation system. It has all the advantages of inverter, can also transport facilities, poor conditions in the mountains, pastures, islands and other areas without electricity, provides absolute reliability for use new energy generation.

1.2 Notes

This user manual allows you to easily operate and maintain the system, be sure to take good care of it. Before use of this product, please read these instructions carefully.

- Before use it,pls carefully read the instructions.
- To avoid injuring personal safety, the installation must be grounded.
- Don’t use high humidity or temperature, have gas or flammable volatile.
- when switch off within a short time, do not open the lid, so that the system's residual voltage electrical shock or damage to the machine..
- Avoid overload to avoid inverter failure.

1.3 open box, storage and transit

1.3.1 open box

The series inverter through a rigorous inspection before shipment, but may be damaged in transit, so after the first check box the following are complete, model specifications are consistent with the order.

- ⊙ inverter complete body;
- ⊙ user manual;
- ⊙ warranty card;
- ⊙ certificate;
- ⊙ Products matching parts and other accessories of the order.

1.3.2 storage

The products should pay attention to the following to avoid possible adverse effects suffered in the store.

- ⊙ placed no dust and dry air of the place;
- ⊙ environment temperature -20 ℃ ~ 50 ℃;
- ⊙ Relative humidity less than 90%, and no drops of water condensation;

⊙ away from corrosive gas and liquid.

⊙ Power long-term need, regular half-day power over the power to prevent moisture inside the device.

1.3.3 transit

Process in the handling of this product should avoid strong vibration, Shuaidie, bump, is strictly prohibited box upside down, not lost when moving out of the box accessories, manuals and warranty cards.

II Brief introduction

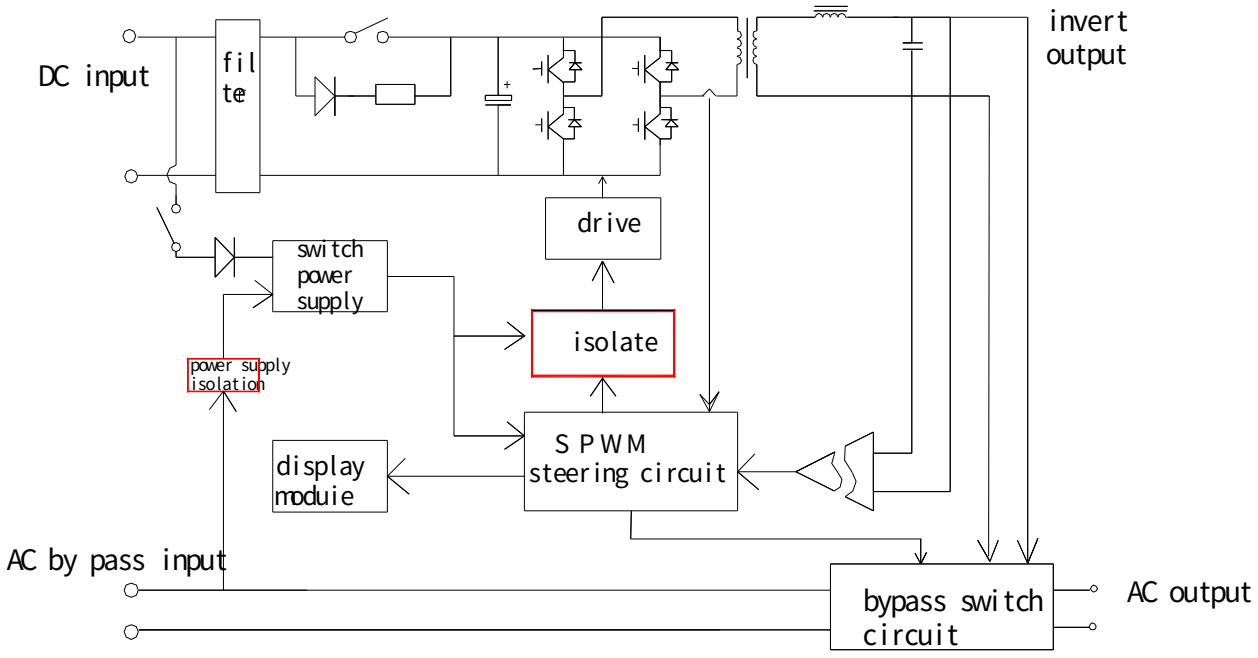
2.1 mostly technic parameter

model		SF-INV11-5
DC input	rated capacity(KVA)	5
	input rated voltage (VDC)	48
	input rated current（A）	123
	input DC voltage range (VDC)	40-75V
AC input	allowed input voltage range (VAC)	220±15%
	input rated current (A)	22.73
	bypass convert time (ms)	≤5
AC output	output rated capacity (KVA)	5
	output rated power (KW)	4.0
	output rated voltage and frequency	220VAC,50HZ
	output rated current（A）	22.73
	output voltage precision（V）	220V±3%
	output frequency precision（HZ）	50±0.05
	Wave distortion rate（THD）（line load）	≤3%
	dynamic response (load0←→100%)	5%
	power factor（PF）	0.8
	overload ability	150%，10seconds
	peak value coefficient (CF)	3:1
	convert efficiency (80% Resistive load)	90%
	display	LED display
	low frequency transformer output	

working environment	isolation intension(input and output)	2000
	noise （1 M）	≤50dB
	environment temperature	-10℃~+50℃
	humidity	0~90%，no drew
	altitude (m)	≤2000
demension	W、L、H (mm)	660*400*700
protect function	Protection for input connecting contrary, input lack of voltage, output overload, output short circuit, over load	

2.2 system working principle

The PV inverter with DC input, to provide DC power inverter, through the inverter supply wave of pure energy for the load, when the PV input voltage or inverter failure, quickly switch to bypass power mode. Specific principles are as follows：



III install and operation

The installation of the machine to pay attention to the rationality of the first, including the choice of installation location, good ventilation, the load is properly configured, the appropriate choice of wire and connected properly, so as to ensure the inverter can be safe and normal operation.

3.1 prepare install

3.1.1 Load configuration guide：

There have rated current, voltage data on the equipment signs , power requirements can be obtained by multiplying the two VA value. Some equipment in watts (W) label, the wattage can be obtained by multiplying the approximate 125 VA (VA) number. Users must be carefully inspected when using load power, so as to avoid overload. Equipment under normal operating state, in particular, the actual power in standby mode power than the machine marked lower, to equipment users in the use of nominal power should be subject, taking into account the impact of equipment in the starting current, best 30% power left margin to ensure reliable power supply.

3.1.2 Recommended wiring of the main circuit

Here are the inverter power wires, cables, recommended cross-section, for reference, inverter voltage and current reference according to the different sections of the BVR matching type 450/750V copper core PVC insulated flexible cable.

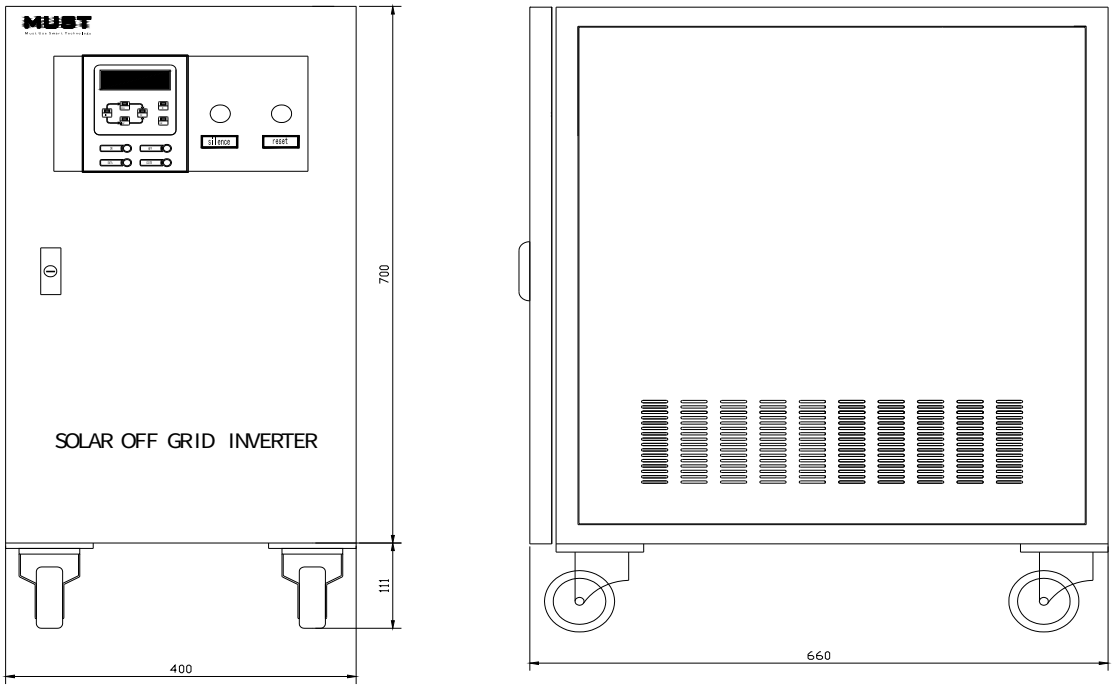
(Recommended cable cross-sectional area in sheet 3.1)

sheet3.1 unit：mm2

5kVA	
input DC wire	output AC wire
25	6

3.2 install

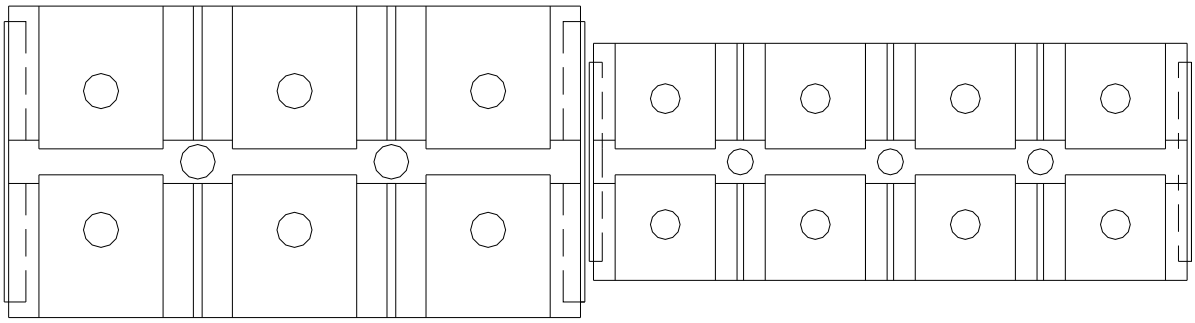
3.2.1 device aspect（picture3.1）



picture3.1

3.2.2 The definition of the back panel terminals（picture3.2）

DC INPUT		PE	AC INPUT		AC OUTPUT	
+	-	⏚	L	N	L	N



picture3.2

3.3 operation

3.3.1 the front panel and display module instruction

the display module unit shown in Figure 3.3

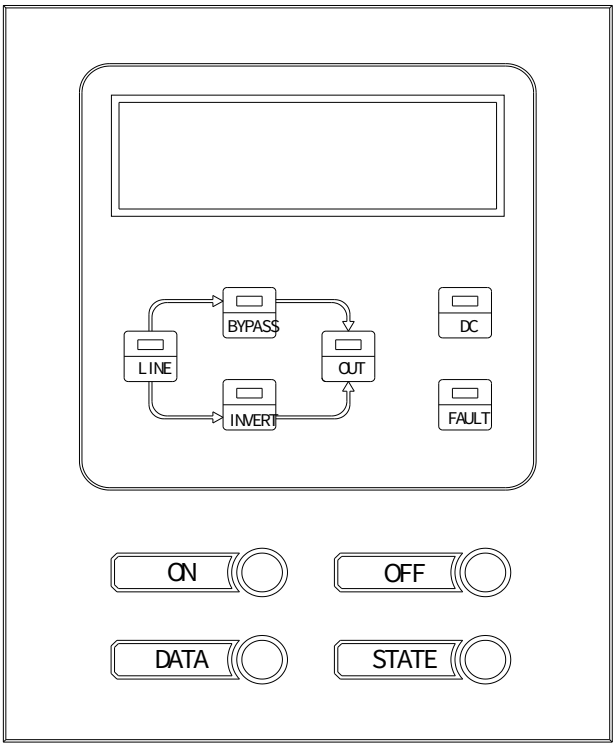


图 Figure 3.3

3.3.2 LED display module and the button operating instruction

Main Power (LINE) indicator: bypass input instruction .light on mean the bypass input is normal.

Bypass (BYPASS) indicator: bypass output instructions, the output light on mean the bypass mode.

Inverter mode (INVERT) indicator: inverter output instructions, light on mean system can work properly

Output (OUT) LED: inverter output instructions, light on mean inverter normal output

DC source (DC) LED: DC level indicator, the amount of light on mean the DC normal DC

Fault (FAULT) indicator: System Fault Indication

ON: Power button / mute button, press the power button for 2 seconds to boot.

OFF: OFF button, press the off button for 2 seconds to shutdown.

DATA: Data check button, press the button to see the machine continuous data.

STATE: status check button, continuously press the button to see the machine status information.

Reset button: When the machine failure (over current, overheating, overload, etc.), the inverter will stop. Press this button to reset the machine to restart the inverter.

Mute button: Inverter failure alarm, press this button to cancel the alarm

3.3.3 Startup and shutdown

Disconnect all power before the ahead power , in case the terminals connected to the rated DC input, AC input, AC output. To ensure that wiring is correct, connect the power, when the front panel LCD should light on and the internal buzzer continuous alarm. If the LCD does not light or buzzer did not ring, check the DC input.

including startup, press the power button (ON) 2 seconds, the inverter start, stop the alarm buzzer, the inverter working in the inverter (INVERT) mode.

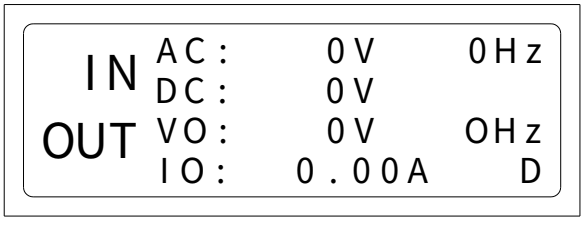
when shutdown, press the off button (OFF) 2 seconds. Inverter stop, continuous buzzer alarm. If not, or overhaul a long time, please disconnect the input and output open space.

Press the mute button to eliminate the buzzer alarm.

When the power inverter voltage is too high, too low voltage inverter, inverter over-current, inverter overload, inverter overheating, then the exclusion of such failure, may be reset through the reset button to restart the inverter

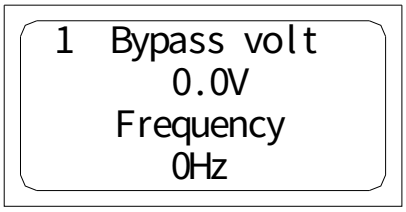
3.3.4 Display module display instruction

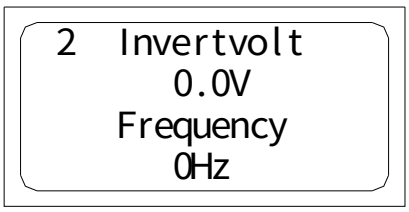
◆ Standby display interface

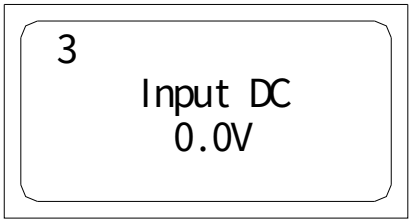


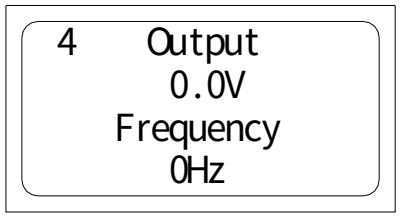
Shows the input DC voltage; output voltage, frequency and current values.

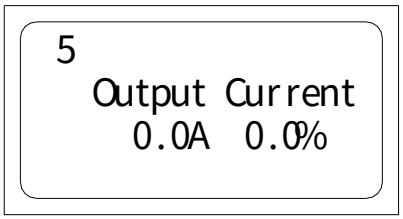
◆ Data check (DATA) display information (through s press this button continually to see the power of real-time data)：



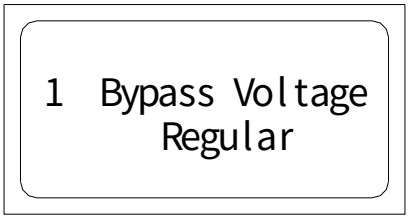


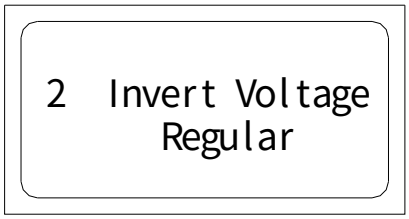


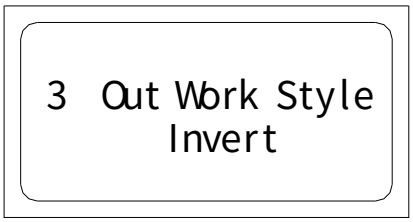


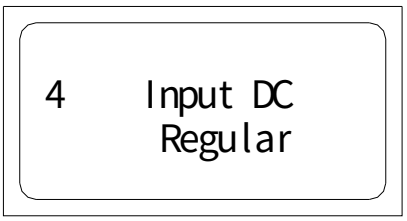


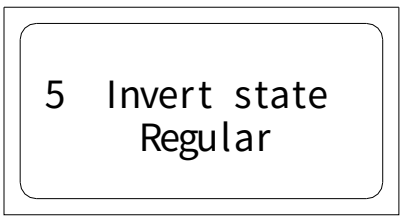
◆ Status check (STATE) display information (through the continuous press this button to see the power of real-time status information)：

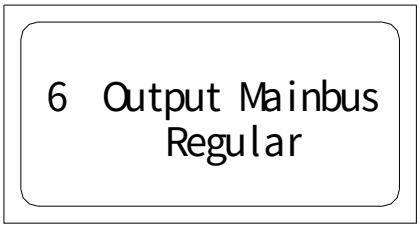


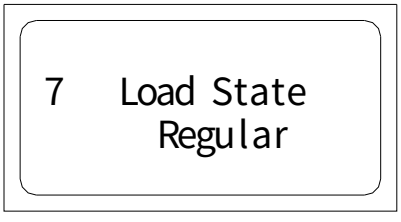












3.3.5 Notes

▲ prohibited suddenly cut off at full load (or turn) all the load, because it easy to cause damage to the machine, the correct way is by using the inverter power button off / boot, or load one by one off (or connect).

▲ chassis cooling fan is controlled by temperature, just getting machine or load is light does not turn the fan is normal, only when the internal temperature control above 50 ℃ collection point will be started.

▲ with a motor load, please leave 3 to 5 times the power margin, with non-linear load (such as computer, industrial computer) Do not exceed the display, the total nominal capacity of the host. That with these two loads, the inverter derating required.

Ⅳ Power protection and abnormal information processing

4.1 Protection class and action status

The type of UPS protection and the protection occurs, the power of the state in sheet4.1.

sheet4.1

Protection	Description	
Input reverse protection	Reversed polarity input DC voltage, inverter fault	备 注
Input undervoltage protection	input DC voltage lower than the short voltage Points , the inverter will automatically shut down inverter	Automatic reset, the troubleshooting output will automatically resume
Input overvoltage protection	Input DC voltage higher than the over-voltage point inverter will automatically shut down	
Output short circuit protection	Output short circuit protection	Manual reset, that is, troubleshooting, and press the "reset", reset the inverter
Output overload protection	Load power more than 120%, after the 1 minute delay inverter will close output. More than 150% of load power, after the 10s delay inverter will close output.	
High voltage inverter protection	When the voltage is higher than the protection over-voltage point , inverter will automatically shut down and switch to bypass mode.	

Protection of low voltage inverter	Inverter voltage is lower than the under voltage protection point, inverter will automatically shut down and switch to bypass mode.	
Overheat protection	The main power inverter device surface temperature exceeds 50 ℃, the start cooling device	

Note: The inverter power supply voltage protection, DC voltage to be increased to return to point (see sheet 3.2) or above in order to re-start; the same over-voltage protection, the DC voltage to be dropped back points or less, in order to restart. Setting this back to the dropout voltage is to prevent the system due to over voltage near the oscillation.

4.2 Power alarm and protection parameters

Due to overvoltage, shortvoltage alarm and protection point is directly related to the working status of the inverter and its performance, so the factory values have been set up, specifically in Table 4.2 as below:

sheet4.2

	Under voltage alarm（V）	Under voltage alarm point to return to work（V）	Under-voltage protection point（V）	Return to work under voltage protection point（V）	Over-voltage protection point（V）	Over-voltage protection point of returning to work（V）
DC input Voltage	43.2	44.1	40.8	45.1	75	○
Bypass input voltage	○	○	180	200	264	260
Inverter output Voltage	○	○	170	○	262	○

4.3 Common symptoms and treatment

the front panel have bypass supply mode, inverter power supply mode, 3 error indication light .This is a inverter mode Priority : AC bypass, battery inputs are normal working, when the inverter working on power supply mode, no fault information output , when the inverter short voltage or inverter failure, the inverter protection, power output into Bypass mode, fault indicator light, intermittent buzzer alarm; the inverter itself has improved protection, once failure, can be accessed through "DATA / STATE" button to check the power of the data / status information. Sheet 4.3 lists the inverter symptoms and treatment methods.

Sheet 4.3 is the bypass mode Priority

<table>
<tr><td>Symptom</td><td colspan="2">Failure</td><td>Treatment</td></tr>
<tr><td rowspan="3">Power supply in the inverter mode, fault indicator light</td><td colspan="2">Bypass input circuit breaker is not closed</td><td>Closed bypass input circuit breaker</td></tr>
<tr><td colspan="2">Low input voltage protection bypass</td><td rowspan="2">Check the bypass input voltage</td></tr>
<tr><td colspan="2">Bypass input voltage high protection</td></tr>
<tr><td rowspan="5">No bypass input, no output inverter, fault indicator light</td><td rowspan="5">Inverter fault</td><td>Overheat protection</td><td rowspan="3">The troubleshooting, manual reset,
sheet4.1</td></tr>
<tr><td>Over-current protection</td></tr>
<tr><td>Overload protection</td></tr>
<tr><td>DC screen over voltage protection</td><td rowspan="3">Automatically reset after Troubleshooting</td></tr>
<tr><td>DC screen under voltage protection</td></tr>
<tr><td></td></tr>
</table>

Note: If you can not handle erroe information in a timely , please connect with the supplier or manufacturer asap!

4.4 Replace fan

If the cooling fan is damaged, should be replaced immediately, otherwise it would expand the scope of failure

V Appendix (communication Protocol)

5.1 Service Guarantee

As my company user, you enjoy the following services:

(1) whole year free warranty

(2) Technical Support

(3) after receiving the notice to respond within 24 hours

(4) the cost of maintenance for life

When you confirm the device fails, please notify our service department to contact, please provide the equipment model number, serial number and complete description of the problem.

However, either of the following conditions are, the list is not in the warranty:

(1) non-permitted by the Company, unauthorized repair damage

(2) voltage regulator with a simple test of the power rectifier bridge increases (due to low or high pressure fleeing, easy to make power the device unstable or burn out.)

(3) any additions or changes

(4) the operation or use of incorrect

(5) Weiyi manual for the cleaning or maintenance required

(6), abnormal environmental conditions more than specifications, resulting in damage

(7) The intentional destruction of human

(8) irresistible natural disasters